BASIS STATEMENT
Amendments to Chapter 305, Permit by Rule Standards
Section 10 Stream Crossings

History

- The proposed amendments to Chapter 305, Permit by Rule Standards, Section 10 Stream crossings were necessary as a result of new legislation ,Public Laws 2009 Chapter 460, which directed the Department to amend Chapter 305 to require municipalities to achieve natural stream flow when they are repairing or maintaining roads or stream crossings. This rulemaking sets significant new standards for stream crossing projects and is a major substantive rulemaking as required by Public Laws 2009 Chapter 460.
- A draft of the amendments, the public notice, and fact sheet were made available for informal comment on the web.
- The proposed rules were posted for public comment and a public hearing was held on November 5, 2009. The comment period ended November 20, 2009 at 5:00 pm.
- Comments were received from 22 people.

Comment and Response

The following people testified and/or submitted written comments on their own behalf or on behalf of an organization or governmental entity.

(1) Steve Timpano – Maine Department of Inland Fisheries and Wildlife (IF&W)
(2) Nick Bennett – Natural Resources Council of Maine (NRCM)
(3) Landis Hudson – Maine Rivers
(4) Charlie Baeder – Sheepscot River Watershed Council
(5) Ted Koffman – Maine Audubon
(6) Joshua Royte – Nature Conservancy
(7) Jennifer Burns Gray – Maine Audubon
(8) Gregory Dore – Town of Skowhegan
(9) Michael Claus – Town of Kennebunk
(10) Rob Pontan – Town of Topsham
(11) Lucky Skidgell, Jr., Lynn Doolan, and Susan Greeley – Town of Morrill
(12) Albert Presgraves – Town of Freeport
(13) William Savage – Acorn Engineering, Inc.
(14) Stephen J. Bradstreet – Maine Chapter of American Public Works Association
(15) Shawn Bennett – Town of Pownal
(16) Margret Wilcox – Town of Unity
(17) John M. Young – Town of Phippsburg
(18) Barbara Berry – Maine Association of Realtors
(19) Mark Bergeron – Sevee & Mahar Engineers, Inc.
(20) Jeffery Austin – Maine Municipal Association
(21) Tom Doak – Small Woodlot Owners Association of Maine
(22) Bob Meyers – Maine Snowmobile Association, Inc.

Comments reflected below are grouped according to topic, and may be abbreviated and/or consolidated. In some cases, typographical or other minor errors in comments have been corrected. Additional amendments proposed in response to comments are shown in double underline and double strike.

Comment. Commenters supported the rule changes indicating that the requirement for stream crossing structures to be as wide as 1.2 times the bankfull width will better assure passage for fish and other aquatic organisms and achieve natural stream flow. Commenters supported the basis for sizing structures on bankfull width and depth. These are concepts being used across the country as states and federal regulatory programs reassess and modify stream crossing standards.

Efforts are underway to look at the fragmentation of habitats as a result of stream crossings. Stream crossing surveys in the Sheepscot and Penobscot River watersheds reveal that approximately 90% of the crossings present passage problems and approximately half of those are severe impediments to fish passage. Surveys in other watersheds are also revealing problems of similar magnitude.

Currently, the installation of crossing structures that are 1.2 times as wide as the bankfull width is required by the U. S. Army Corps of Engineers (ACOE) in its Maine State Programmatic General Permit (PGP). It is also the policy of the Maine Department of Transportation (MDOT) and the design standard for Atlantic Salmon restoration efforts involving culvert replacements. (1, 2, 3, 4, 5)

Response. The Department concurs. Current and past regulations for both new crossings and maintenance of existing crossings do not provide adequate standards for the passage of fish or other aquatic organisms. Stream crossing surveys not only in Maine but across the country confirm this. The new standards proposed in the rule are based on those in several regulatory programs across the country, the MDOT Waterway and Wildlife Crossing Policy and Design Guide (June 2008), as well as the Army Corps of Engineers Programmatic General Permit.

Comment. Commenters acknowledge that higher initial costs may be involved to comply with the new standards but that maintenance costs over the life of the structures will be less and result in fewer catastrophic failures of the structures. Failures or "blow outs" of existing crossings result in costly emergency repairs, harm to other infrastructure and property, and the disruption of traffic and access, all having a significant effect on the state economy. (2, 4, 5, 6)

Response. The Department agrees that lower maintenance cost and fewer 'blow outs' of stream crossings are likely if the crossings meet the proposed standards. However, hard data on cost savings associated with the maintenance of stream crossings constructed to the proposed standards is not readily available. While it is stated in the Natural Resources Conservation Service white paper "The Economics of Culvert Replacement: Fish Passage in Eastern Maine" that "...virtually no maintenance costs..." are associated with installing an arch culvert, authors of "Cost Analysis of Alternative Culvert Installation Practices in Minnesota", June 2009, suggest further study is needed to assess if maintenance costs are reduced for crossings installed to similar standards as are being proposed in the rule.

Comment. Several commenters were concerned about higher costs associated with installing new crossings or replacing existing crossing structures as a result of the law amendments and proposed rule changes, creating an excessive burden on town budgets. Less money is available in town budgets and less funding is being received by towns. It was suggested that the fiscal impact was understated and that costs for meeting the new standards should be assessed better before

implementing the rule; the process should be slowed down to better identify who is affected and how. Suggestions also included the development of funding mechanisms to assist towns in their maintenance activities, capping the amount of additional expense a town would have to incur to meet the new standards when replacing existing crossing structures, exempting non-profit trail building organizations from the standards, expanding the waivers from meeting standards where fish passage is already blocked, or phasing in the requirements over time based on the size of the structure being replaced. (4, 8, 9, 10, 11, 12, 15, 16, 17, 21, 22)

Response. The Department acknowledges that meeting the proposed standards will increase installation costs for both new crossings and culvert replacements. However, the amendments to the exemptions for road crossing maintenance and culvert replacement in the Natural Resources Protection Act (NRPA) as a result of Public Laws 2009 Chapter 460 are in effect now and require these types of activities to not block passage for fish and other aquatic organisms and to achieve natural stream flow. Therefore, this does not allow the Department to phase in the requirement to meet the new standards. The proposed rule defines "natural stream flow" so delaying the rule's implementation will lead to confusion and potentially violations by those undertaking these exempt activities. The Department is not in a position to develop funding mechanisms for municipalities to meet the new standards. However it can explore existing opportunities for funding and provide this information as part of its planned handbook, which is to be developed to assist the regulated community in meeting the rule standards when constructing new crossing or maintaining existing ones.

Comment. Commenters questioned having to meet the new standards where blockage to fish passage already exists such as rocks, grade changes, waterfalls or downed trees. (10, 16)

Response. The Department agrees that both human-caused and natural obstructions can exist in streams preventing fish passage throughout the water course. However, fish populations often thrive above and below such obstructions. It makes no sense to allow new or reconstructed crossings to further block passage or begin to block passage within the stretch of the water course where the activity occurs. Natural obstructions such as fallen trees may interfere with passage but do not necessarily block it and will typically break down over time. No changes were made to the rule.

Comment. A number of commenters approved of the process the Department used to develop the rule and appreciated the opportunity to take part in the process. (1, 5, 20) Some commenters were concerned that they were not aware of the effort to amend stream crossing standards and were not part of the rule's development. (8, 10, 18, 22)

Response. The Department developed the proposed new standards by reviewing other regulatory program requirements and studies of fish passage problems here and elsewhere in the country. Preliminary rule amendments were drafted with the assistance of a workgroup that discussed, refined and further developed new standards. Forty one persons were on the mailing list for the workgroup, representing a wide variety of interests, many of whom were active in the passing of Public Laws 2009 Chapter 460. As noted in the DEP staff presentation to the Board of Environmental Protection (Board), the Department chose to develop new rule standards that would apply to all who construct new crossings or maintain existing crossings, not just municipalities. Although people in the public works departments of specific towns were not on the workgroup, a representative of the Maine Municipal Association was included. Two meetings were held with the workgroup to explain the background to the proposed standards, identify strengths and weaknesses, explore new opportunities for the permit by rule process, and develop a final draft rule. As many as 23 persons attended these workgroup sessions.

Comment. Some commenters felt that special technical expertise for such things as geotechnical or hydrologic analysis, would need to be hired at extra expense to meet the new standards. In addition, more time would be required to obtain permissions from the IF&W and Department of Marine Resources (DMR) and for permit preparation. (8, 14, 15, 21, 22)

Response. It is apparent that a number of commenters misunderstand when a permit may be required or what standards must be met when replacing culverts. Culvert replacements are still exempt under the NRPA - no permit is required - provided it achieves "natural stream flow". As defined in the proposed rule, this means replacing a culvert with one that spans 1.2 times the bankfull width. This is the only standard directly related to meeting the exemption. For municipalities, this is the primary determination which must be made since they are generally not creating new stream crossings. There is no timing approval, etc. required when undertaking an exempt activity.

Determining a stream's cross-sectional area based on the "bankfull width" or "bankfull depth" is not really different than measuring cross-sectional area based on the normal high water line as is currently required. Informational material planned to be developed by the Department and the Maine Department of Transportation will provide guidance such that anyone can make such determinations and measurements and design a new crossing accordingly. It is true that some additional time will be required to obtain IF&W or DMR approval for those activities listed in Section 10(B)(4). Three of the listed activities are new waiver requests under the rule and require specific review by those agencies. Currently under the rule the Department makes the determination about constructing a new crossing outside the timeline contained in the rule and staff makes that determination in consultation with the natural resource agencies. Having lost two DEP staff positions directly responsible for reviewing PBR submissions, it was felt necessary to have the applicant obtain these approvals from IF&W and DMR directly before submission of the PBR form.

Comment. Commenters questioned the exemption for crossings associated with forest management activities from meeting the proposed rules. (10, 15)

Response. Public Laws 2009 Chapter 460 specifically exempts crossings associated with forest management activities from meeting any requirements contained in or resulting from that legislation. Therefore it was necessary to include exemptions from most of the new standards proposed in the rule for crossings associated with forest management activities. Stream crossings on roads associated with forest management activities must meet the current PBR standards.

Comment. One commenter had concerns that Public Laws 2009 Chapter 460 directed the Department to develop new rules for municipalities, not private landowners, to provide for passage of fish and other aquatic organisms and achieve natural stream flow. Many Maine families may not have the resources to meet the new requirements which may include the need for bridges or large spanning structures. (18)

Response. Public Laws 2009 Chapter 460 did direct the Department to amend its rules regarding municipal maintenance and repair activities associated with stream crossings. However, the new language in the NRPA exemptions for maintaining stream crossings and replacing culverts applies to everyone. It is the Department's position that providing passage and achieving natural stream flow should be a goal at all existing crossings and required for all new crossings regardless of who owns them. From an environmental perspective, it matters not who owns a stream crossing. Interestingly, other commenters suggested the rules should focus more

attention on crossings maintained by private individuals, such as those on camp roads. The Department expects to take up the scope of these proposed rules with the Legislature when the provisionally adopted rules are brought before it in 2010.

Comment. Several commenters were concerned that upsizing a culvert that needs replacement in accordance with the new standards would lead to the wash out of downstream culverts not similarly sized pursuant to the new rule standards. Examples were given of what kind of a new crossing structure might be needed to meet the new standards for purposes of illustrating this point as well as the cost increase involved. (9, 14, 15)

Response. The examples given describing the need for much larger structures and huge costs in order to meet the new standards did not mention if they were based on the bankfull width and depth. As noted previously, replacement culverts need only meet the spanning requirement of 1.2 times the bankfull width as proposed in the rule. It appears that an assumption was made by the commenter that all replaced culverts would have to be significantly larger. One example simply added the width of existing culverts, including overflow culverts, to conclude that a new replacement structure would have to be 1.2 times as wide as the total diameter of all the pipes installed at the crossing. This is not the basis for determining adequate size. In the Wisconsin study of replacing culverts, it was noted that a number of culverts did not need to be bigger, only set differently (e.g. embedded in the stream) to meet the new crossing standards which are similar to those proposed in this rule. It is highly unlikely that a culvert currently exists of such a small size that it does not pass larger storm events given the frequency and magnitude of storms seen in recent history. The new rules will mostly effect the way replacement culverts are set, not necessarily that they pass a much larger amount of water such that downstream culverts will be blown out.

Comment. Some commenters questioned the prohibition on using smooth-bore pipes, commonly made of high density polyethylene plastic (HDPE), in the rule. HDPE pipe has a very long life (possibly hundreds of years), is less costly, does not catch debris such as sticks like corrugated pipe does, and has other benefits such as being less likely to freeze with water. (14, 15)

Response. The Department is aware that HDPE pipe is very durable and passes water through it more quickly and efficiently than a corrugated pipe. Some members of the work group felt a smooth-bore pipe will not retain stream bed load materials during higher flows even if embedded in accordance with the proposed rule. Because of this and that the legislation prompting these amendments focuses on passage for fish and other aquatic organisms and achieving natural stream flow, the Department proposed to prohibit them for new crossings under the permit by rule process. A waiver for the use of a smooth-bore structure is proposed to be allowed in the rule with a signoff from the Departments of Inland fisheries and Wildlife and Marine Resources. HDPE pipe can be made to contain baffles or have corrugated material attached to the lower portions of the pipe. For purposes of this rule, HDPE pipe containing these measures will not be considered smooth-bore and may be used.

Comment. Commenters felt that the new rules will significantly impact people constructing and maintaining recreational trails and that the Department moved forward too quickly in proposing the rules without considering the impact on them. Recreational trails are constructed and maintained primarily by volunteers with limited financial resources, time and expertise. The new standards would require a level of expertise for planning and construction not readily available to recreational clubs. The requirement that timing approval be obtained from both IF&W and DMR

will slow the process as well. It also feared that some landowners may discontinue recreational access rather than risk penalties for work performed on their property by volunteers. (21, 22)

Response. Most of the Department's experience with permitting new crossings for recreational trails has been to place bridges. Many of these trails are for snowmobiles and all terrain vehicles and are located in areas not readily accessed by heavy equipment. Simple bridges are installed in many cases as a result. These rules will not change the ability of clubs to place bridges at new crossing locations nor require larger ones. Bridges typically span the stream's banks and have adequate capacity for flow underneath. As stated earlier, it does not take a particular expertise to design for crossings under the current or proposed rule. It is simply a matter of learning the new terminology and where measurements need to be made for sizing structures. Also, there is no requirement to obtain timing approval from DMR or IF&W for bridges. Besides informational material the Department and MDOT intend to develop, the Department of Conservation publishes a handbook on how to construct and maintain recreational trails which can be updated to incorporate the new design standards proposed in the rule.

Comment. Commenters asked where the stream cross-sectional measurements should be made. If measuring the bankfull width and depth requires going on private property off the right of way, there may be problems with obtaining landowner permission and there may be liability issues if someone injures themselves during field measurements when on someone else's property. (9, 13, 17)

Response. For new crossings, stream measurements should be taken at or near the point of crossing: several measurements may be necessary to get the most representative cross-section of the stream. At existing crossings, if there is evidence of the stream widening above or below the culvert, then it is necessary to get away from the influence of existing culvert. This may require going outside the road right of way.

It is the Department's understanding that most maintenance activities involving culvert replacement are planned for and budgeted so there should be time to obtain landowner permission if stream measurements need to be taken outside the road right of way. Provided landowner permission is obtained, it is assumed there is no liability to the landowner if a person is injured during stream measurements.

Comment. A commenter noted that there exists a 'local bridge law' that provided up to 50% of the funds for maintenance of them. However, no funding is being currently received by towns under this program. If towns end up building bridges as replacements for some culverts, there currently is no state assistance to aid in their repair. (9)

Response. It is the Department's understanding that at one time, bridges were generally maintained by the MDOT and that towns paid a portion of the costs to maintain them, whether on a state or town road. However, that law changed in 2001 such that the MDOT is responsible solely for maintaining all bridges beyond a certain size and towns are responsible for maintaining the smaller ones on local roads. Now, rather than being responsible for partially funding all bridge maintenance activities in its town, the town has responsibility for maintaining only those smaller bridges by itself, a shift deemed to have a significant fiscal benefit to the towns. It is not foreseen that culvert replacement activities will necessarily require more bridges to be built in order to "achieve natural flow".

Comment. One commenter noted that a federal program providing disaster funds to help municipalities replace blown out stream crossings requires putting back the same sized structure, not a larger or different one. (8)

Response. The Department was not able to determine the exact requirements of this federal program. The commenter implies that the federal program requires the exact same type of crossing to be put back but it seems more likely that the program will only pay for replacement of the exact same type of crossing. As is the case with most of the laws administered by the Department, structures being replaced must be done such that they meet current standards.

Comment. The State should set priorities for where culvert replacements should occur. In association with other organizations, the State has embraced the concept of performing stream crossing surveys on a watershed basis, see "Maine Road-Stream Crossing Survey Manual" April 2008. The manual encourages conducting surveys in order to prioritize the most important water courses where replacing poorly performing culverts reconnects the most habitat. It was suggested that the State perform these surveys and prioritize culvert replacement activities before implementing the rule. (9, 16)

Response. The Department is aware of, and took part in the creation of, the survey manual and numerous surveys that have been or are being conducted. Typically, the surveys are focused within certain watersheds. While it makes sense environmentally and financially to survey watersheds for problem crossings (when funding for surveys is available), then prioritize those to be fixed based on costs and the amount of habitat being 'reconnected', Public Law 2009 Chapter 460 envisions creation of baseline fish passage requirements.

Comment. One commenter posed a number of questions about the rule. (17)

> **Question:** What is the definition of "aquatic organisms?
> **Response:** There is no definition in the rule or the law. Generally, the Department considers the term to include water-dependent creatures such as crustaceans, certain insects, and some amphibians. There are others that consider the term to essentially include all water dependent species, including mammals.
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> **Question:** What agency's determination do we accept for the 25 year frequency calculation referred to in Section 10(C)(6)?
> **Response:** The rule allows for sizing culverts using a rule of thumb method (3.5 times the cross-sectional area) which is the most common method used by applicants. Calculation of 25-year storm flows is done through modeling. No agency is responsible for performing this calculation but engineering firms, including the Soil and Water Conservation Districts, may be able to perform this analysis.
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> **Question:** Regarding the definition of "perennial watercourse", if a stream is not shown on a USGS topographic map, is it exempt from these regulations?
> **Response:** No. All crossings of streams as defined in the NRPA are subject to these rules if permitted under the permit by rule process. There are some standards specific to perennial watercourses which is why the definition exists.

Comment. One commenter posed a number of questions. (19)

> **Question:** Could you please send me the small business economic impact statement?
> **Response:** This was done via e-mail.

Question: With regard to the October 1, 2009 Memorandum to the Board, is the intent to design culverts to the 2-year storm events?
Response: No, the standard is to design to a 25-year storm event. Studies have shown that the bankfull width and depth measurements reflect the true channel forming flows of a stream, which has been determined to be about a 2 year storm event. The 2 year storm event was referred to because this is related to the use of bankfull width and depth for determining a stream's cross-sectional area rather than the normal high water line.

Question: Does Section 10(A)(2) apply to existing culverts that are not smooth-bore? What is the intent of using the term 'smooth-bore culvert' here?
Response: In Section 10(C)(11)(d), smooth-bore culverts are not allowed for new culverts. Section 10(A)(2), however, allows the use of them as a replacement activity provided either IF&W or DMR signs off on their use (see Section 10(B)(4)(a)).

Question: Can you clarify where we can find the "Corps of Engineers Information Bulletin"?
Response: This document is available from the Department and the ACOE. Department staff routinely includes this bulletin in mailings of PBR material.

Question: Is there a standard 'notification form' for waiver requests?
Response: The Department has developed and distributes the forms for IF&W and DMR sign-off on waivers to the standards. These will be modified as needed and available on line after the final content of the rule is approved by the Legislature and the Board.

Question: In Section 10(C)(16), how can DEP provide predictability in the 'time period approved by the DEP'?
Response: When the DEP has to make the timing determination (only for forest management activities in the proposed rule), it is done in consultation with IF&W and DMR but it has to be done within the 14 day review period after receiving the PBR. On smaller streams, the Department typically allows work to go forward when the applicant requests.

Comment. It would be very helpful to include drawings or sketches in an appendix to this section that shows typical cross sectional areas, bankfull widths and depths. (19)

Response. The Department plans to develop a 'handbook' with diagrams and instructions to help people understand and incorporate the new standards into the design of their crossing projects. In addition, the MDOT is developing a guide for the maintenance and repair of crossings based on its "Waterway and Wildlife Crossing Policy and Design Guide" (June 2008).

Question. One commenter recommended changing the language from 'bottom of culvert' to 'flow line or invert of the culvert/structure' in Section 10(C)(11)(c) because he believes the intent of this section is to have the flow line below the stream bed elevation, not the bottom of the structure. For instance, you could have an 8 or 10-inch thick box culvert where the bottom of the structure would be below the stream bed elevation, but the flow line of the structure could be at or above the stream bed elevation. (19)

Response. The Department agrees. The following change was made (double underline shows the change):

Section 10(C)(11)(c)

(c) Have the inside bottom (flow line) of the entire structure~~culvert~~ installed ~~at or~~ below stream bed elevation~~, except for additional culverts at the same crossing~~;. Except for crossings associated with forest management activities, the structure must be embedded in the stream channel such that it spans 1.2 times the bankfull channel at the bankfull elevation.